

Amendments to Claims

This listing of Claims will replace all prior versions, and listings, of claims in the application:

Claim 1. (currently amended) An isolated nucleic acid encoding a polypeptide with isoflavone synthase activity having the amino acid sequence set forth in SEQ ID NO:66, wherein the nucleic acid fragment does not have the nucleotide a nucleic acid sequence as set forth in SEQ ID NO:9, and wherein

~~Xaa₁₀ is Phe or Leu~~
~~Xaa₁₆ is Ser or Leu~~
~~Xaa₂₃ is Ser or Thr~~
~~Xaa₂₅ is Ile or Lys~~
~~Xaa₃₉ is Lys or Arg~~
~~Xaa₄₈ is Pro or Leu~~
~~Xaa₆₀ is Pro or Leu~~
~~Xaa₇₃ is Leu or His~~
~~Xaa₇₄ is Ser or Tyr~~
~~Xaa₉₅ is Ala or Thr~~
~~Xaa₉₆ is Asn or His~~
~~Xaa₁₀₂ is Asn or Ser~~
~~Xaa₁₁₀ is Ile, Val, or Thr~~
~~Xaa₁₁₂ is Arg or His~~
~~Xaa₁₁₇ is Asn or Ser~~
~~Xaa₁₁₈ is Ser or Leu~~
~~Xaa₁₂₁ is Met or Arg~~
~~Xaa₁₂₂ is Ala or Val~~
~~Xaa₁₂₄ is Phe or Ile~~
~~Xaa₁₂₉ is Lys or Arg~~
~~Xaa₁₄₇ is Lys or Glu~~
~~Xaa₁₅₉ is Leu or Phe~~
~~Xaa₁₆₂ is Ala or Val~~
~~Xaa₁₆₆ is Ser or Gly~~
~~Xaa₁₇₀ is Gln or Arg~~
~~Xaa₁₇₅ is Val or Leu~~
~~Xaa₁₈₃ is Ala or Thr~~
~~Xaa₁₈₇ is Thr or Ile~~
~~Xaa₁₉₁ is Met or Val~~
~~Xaa₂₀₉ is Phe or Tyr~~

~~Xaa₂₁₉ is Arg or Trp~~
~~Xaa₂₂₃ is Tyr or His~~
~~Xaa₂₅₃ is Gly or Glu~~
~~Xaa₂₅₉ is Lys or Glu~~
~~Xaa₂₆₃ is Val or Asp~~
~~Xaa₂₆₄ is Val, Asp, or Ile~~
~~Xaa₂₆₈ is Ala or Val~~
~~Xaa₂₇₂ is Phe or Leu~~
~~Xaa₂₈₅ is Thr or Met~~
~~Xaa₂₉₂ is Glu or Asp~~
~~Xaa₂₉₄ is Thr, or Ile~~
~~Xaa₃₀₄ is Phe or Leu~~
~~Xaa₃₀₆ is Thr or Ile~~
~~Xaa₃₁₁ is Val or Glu~~
~~Xaa₃₁₂ is Val or Ala~~
~~Xaa₃₂₅ is Arg or Lys~~
~~Xaa₃₂₈ is Gln or Glu~~
~~Xaa₃₃₄ is Val or Ala~~
~~Xaa₃₄₂ is Arg or Ile~~
~~Xaa₃₇₇ is Thr or Ile~~
~~Xaa₃₈₁ is Glu or Gly~~
~~Xaa₃₈₅ is Tyr, His, or Cys~~
~~Xaa₃₈₇ is Ile or Thr~~
~~Xaa₃₉₃ is Val or Ile~~
~~Xaa₃₉₄ is Leu or Pro~~
~~Xaa₄₀₂ is Arg or Lys~~
~~Xaa₄₀₄ is Ser or Pro~~
~~Xaa₄₁₃ is Ser or Phe~~
~~Xaa₄₂₂ is Glu or Gly~~
~~Xaa₄₂₈ is Gly or Arg~~
~~Xaa₄₂₉ is Pro or Leu~~
~~Xaa₄₃₅ is Gln or Arg~~
~~Xaa₄₄₇ is Arg or Gly~~
~~Xaa₄₅₃ is Asn, Ser, or Ile~~
~~Xaa₄₅₉ is Met or Thr, and~~
~~Xaa₄₈₅ is Asp or Gly.~~

Claim 2-3 (canceled).

Claim 4. (Currently amended) An isolated nucleic acid encoding a polypeptide with isoflavone synthase activity capable of converting 2S-flavanone into an isoflavonoid and wherein the nucleic acid ~~is~~does not ~~have~~ ~~at~~he nucleic acid sequence ~~as~~ set forth in SEQ ID NO:9.

Claim 5-10 (canceled).

Claim 11. (previously presented) A chimeric polynucleotide comprising the nucleic acid of Claim 1 operably linked to at least one regulatory sequence.

Claim 12. (previously presented) A transformed host cell comprising the chimeric polynucleotide of Claim 11.

Claim 13. (previously presented) The transformed host cell of Claim 12 further comprising a second chimeric polynucleotide comprising a nucleic acid encoding a polypeptide that regulates expression of at least one enzyme of the phenylpropanoid pathway.

Claim 14. (currently amended) The transformed host cell of Claim 13 wherein the second chimeric polynucleotide ~~comprises a chimera containing a polynucleotide encoding the maize R region, wherein the R region is between polynucleotide encoding the maize C1 DNA binding domain~~ encodes a polypeptide comprising the maize C1 DNA binding domain, the maize transcription factor R, and the maize C1 activation domain.

Claim 15. (original) The transformed host cell of Claim 12 wherein the host cell is a eukaryotic cell.

Claim 16. (original) The eukaryotic cell of Claim 13 wherein the cell is a yeast cell.

Claim 17. (original) The eukaryotic cell of Claim 15 wherein the cell is a plant cell.

Claim 18. (original) The plant cell of Claim 17 wherein the cell is a soybean cell.

Claim 19. (original) The plant cell of Claim 17 wherein the cell is a corn cell.

Claims 20-25. (canceled).

Claim 26. (previously presented) A method of altering the level of expression of isoflavone synthase in a host cell comprising:

- (a) transforming a host cell with the chimeric polynucleotide of Claim 11 or transforming the host cell with the chimeric polynucleotide of Claim 11 and with a second chimeric polynucleotide comprising a nucleic acid sequence encoding a polypeptide that regulates expression of at least one enzyme of the phenylpropanoid pathway; and
- (b) growing the transformed host cell produced in step (a) under conditions that are suitable for expression of the chimeric polynucleotide

wherein expression of the chimeric polynucleotide results in production of altered levels of isoflavone synthase in the transformed host cell.

Claims 27 and 28 (canceled).

Claim 29. (previously presented) The method of Claim 26 wherein the host cell is a eukaryotic cell.

Claim 30. (previously presented) The method of Claim 26 wherein the eukaryotic cell is a yeast cell.

Claim 31. (previously presented) The method of Claim 26 wherein the eukaryotic cell is a plant cell.

Claim 32. (original) The method of Claim 31 wherein the plant cell is a soybean cell.

Claim 33. (original) The method of Claim 31 wherein the plant cell is a corn cell.

Claims 34-50 (canceled).

Claim 51. (previously presented) The isolated nucleic acid fragment of Claim 1 where

Xaa₁₀ is Phe
Xaa₁₆ is Leu
Xaa₂₃ is Ser
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Ser
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Asn
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Ser

Xaa₁₇₀ is Gln
Xaa₁₇₅ is Val
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is Tyr
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Ala
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Glu
Xaa₂₉₃ is Gln
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Arg
Xaa₃₂₈ is Gln
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Val
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Gly
Xaa₄₂₉ is Pro

Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Asp.

Claim 52. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Phe or Leu
Xaa₁₆ is Leu
Xaa₂₃ is Ser
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Ser
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Thr
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Asn
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Arg
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Ser
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Val
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp

Xaa₂₂₃ is Tyr
Xaa₂₅₃ is Gly
Xaa₂₅₉ is Glu
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Ala
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Glu
Xaa₂₉₃ is Gln
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Leu
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Arg
Xaa₃₂₈ is Gln
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Val
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Gly
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Asp.

Claim 53. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Phe or Leu

Xaa₁₆ is Leu

Xaa₂₃ is Thr

Xaa₂₅ is Lys

Xaa₃₉ is Lys

Xaa₄₈ is Leu

Xaa₆₀ is Leu

Xaa₇₃ is Leu

Xaa₇₄ is Tyr

Xaa₉₅ is Thr

Xaa₉₆ is His

Xaa₁₀₂ is Asn

Xaa₁₁₀ is Ile

Xaa₁₁₂ is Arg

Xaa₁₁₇ is Ser

Xaa₁₁₈ is Leu

Xaa₁₂₁ is Met

Xaa₁₂₂ is Val

Xaa₁₂₄ is Phe

Xaa₁₂₉ is Lys

Xaa₁₄₇ is Lys

Xaa₁₅₉ is Phe

Xaa₁₆₂ is Val

Xaa₁₆₆ is Gly

Xaa₁₇₀ is Gln

Xaa₁₇₅ is Leu

Xaa₁₈₃ is Thr

Xaa₁₈₇ is Ile

Xaa₁₉₁ is Met

Xaa₂₀₉ is Tyr

Xaa₂₁₉ is Trp

Xaa₂₂₃ is His

Xaa₂₅₃ is Glu

Xaa₂₅₉ is Lys

Xaa₂₆₃ is Val

Xaa₂₆₄ is Val

Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Thr
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Ile
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Gly
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 54. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Phe or Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys

Xaa₄₈ is Pro
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Ser
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Val
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is Tyr
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Ala
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Glu
Xaa₂₉₃ is Gln
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe

Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Arg
Xaa₃₂₈ is Gln
Xaa₃₃₄ is Val
Xaa₃₄₂ is Ile
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is His
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Val
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Gly
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Asp.

Claim 55. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Phe or Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn

Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Val
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg

Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Cys
Xaa₃₈₇ is Thr
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Leu
Xaa₄₃₅ is Arg
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 56. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe

Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Ala
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg

Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 57. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Ala
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu

Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg

Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 58. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu

Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Thr
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 59. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Leu
Xaa₁₆ is Leu

Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Asp

Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Glu
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 60. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr

Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Ile
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Asp
Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Thr
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys

Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met
Xaa₄₈₅ is Gly.

Claim 61. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser

Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Thr
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Va
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile

Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 62. (previously presented) The isolated nucleic acid fragment of Claim 1 where

Xaa₁₀ is Phe
Xaa₁₆ is Leu
Xaa₂₃ is Ser
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Ser
Xaa₉₅ is Ala
Xaa₉₆ is His
Xaa₁₀₂ is Ser
Xaa₁₁₀ is Val
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Asn
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Glu
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val

Xaa₁₆₆ is Ser
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Val
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is Tyr
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Ala
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Glu
Xaa₂₉₃ is Gln
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Arg
Xaa₃₂₈ is Gln
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Val
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Lys
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Gly

Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Asp.

Claim 63. (previously presented) The isolated nucleic acid fragment of Claim 1 where

Xaa₁₀ is Phe or Leu
Xaa₁₆ is Ser
Xaa₂₃ is Ser
Xaa₂₅ is Ile
Xaa₃₉ is Arg
Xaa₄₈ is Leu
Xaa₆₀ is Pro
Xaa₇₃ is Leu
Xaa₇₄ is Ser
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is His
Xaa₁₁₇ is Asn
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Ser
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Val
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe

Xaa₂₁₉ is Trp
Xaa₂₂₃ is Tyr
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Ala
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Glu
Xaa₂₉₃ is Gln
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Val
Xaa₃₂₅ is Arg
Xaa₃₂₈ is Gln
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Val
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Ser
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Gly
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Ser
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Asp.

Claim 64. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Phe or Leu

Xaa₁₆ is Leu

Xaa₂₃ is Thr

Xaa₂₅ is Lys

Xaa₃₉ is Lys

Xaa₄₈ is Leu

Xaa₆₀ is Leu

Xaa₇₃ is Leu

Xaa₇₄ is Tyr

Xaa₉₅ is Thr

Xaa₉₆ is His

Xaa₁₀₂ is Asn

Xaa₁₁₀ is Ile

Xaa₁₁₂ is Arg

Xaa₁₁₇ is Ser

Xaa₁₁₈ is Ser

Xaa₁₂₁ is Met

Xaa₁₂₂ is Val

Xaa₁₂₄ is Phe

Xaa₁₂₉ is Lys

Xaa₁₄₇ is Lys

Xaa₁₅₉ is Phe

Xaa₁₆₂ is Val

Xaa₁₆₆ is Ser

Xaa₁₇₀ is Gln

Xaa₁₇₅ is Val

Xaa₁₈₃ is Thr

Xaa₁₈₇ is Ile

Xaa₁₉₁ is Met

Xaa₂₀₉ is Phe

Xaa₂₁₉ is Trp

Xaa₂₂₃ is Tyr

Xaa₂₅₃ is Glu

Xaa₂₅₉ is Lys

Xaa₂₆₃ is Val

Xaa₂₆₄ is Val

Xaa₂₆₈ is Ala
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Glu
Xaa₂₉₃ is Gln
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Val
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Gln
Xaa₃₃₄ is Ala
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Gly
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Val
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Gly
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Asp.

Claim 65. (previously presented) The isolated nucleic acid fragment of Claim 1 where

Xaa₁₀ is Phe or Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys

Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Asp
Xaa₂₆₄ is Val
Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Met
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe

Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Ile
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Leu
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 66. (previously presented) The isolated nucleic acid fragment of claim 1
where

Xaa₁₀ is Phe or Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn

Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Arg
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Val
Xaa₂₇₂ is Leu
Xaa₂₈₅ is Met
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg

Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Glu
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 67. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Phe or Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Ala
Xaa₁₂₄ is Phe

Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Phe
Xaa₁₆₂ is Val
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu
Xaa₁₈₃ is Thr
Xaa₁₈₇ is Thr
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Arg
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Val
Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Thr
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg

Xaa₄₀₄ is Ser
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg
Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 68. (previously presented) The isolated nucleic acid fragment of Claim 1
where

Xaa₁₀ is Phe or Leu
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is Leu
Xaa₇₄ is Tyr
Xaa₉₅ is Thr
Xaa₉₆ is His
Xaa₁₀₂ is Asn
Xaa₁₁₀ is Ile
Xaa₁₁₂ is Arg
Xaa₁₁₇ is Ser
Xaa₁₁₈ is Ser
Xaa₁₂₁ is Met
Xaa₁₂₂ is Val
Xaa₁₂₄ is Phe
Xaa₁₂₉ is Lys
Xaa₁₄₇ is Lys
Xaa₁₅₉ is Leu
Xaa₁₆₂ is Val
Xaa₁₆₆ is Gly
Xaa₁₇₀ is Gln
Xaa₁₇₅ is Leu

Xaa₁₈₃ is Thr
Xaa₁₈₇ is Ile
Xaa₁₉₁ is Met
Xaa₂₀₉ is Phe
Xaa₂₁₉ is Trp
Xaa₂₂₃ is His
Xaa₂₅₃ is Glu
Xaa₂₅₉ is Lys
Xaa₂₆₃ is Val
Xaa₂₆₄ is Ile
Xaa₂₆₈ is Val
Xaa₂₇₂ is Phe
Xaa₂₈₅ is Thr
Xaa₂₉₂ is Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Ile
Xaa₃₀₁ is Phe
Xaa₃₀₆ is Thr
Xaa₃₁₁ is Val
Xaa₃₁₂ is Ala
Xaa₃₂₅ is Lys
Xaa₃₂₈ is Glu
Xaa₃₃₄ is Val
Xaa₃₄₂ is Arg
Xaa₃₇₇ is Thr
Xaa₃₈₁ is Glu
Xaa₃₈₅ is Tyr
Xaa₃₈₇ is Ile
Xaa₃₉₃ is Ile
Xaa₃₉₄ is Leu
Xaa₄₀₂ is Arg
Xaa₄₀₄ is Pro
Xaa₄₁₃ is Phe
Xaa₄₂₂ is Gly
Xaa₄₂₈ is Arg
Xaa₄₂₉ is Pro
Xaa₄₃₅ is Gln
Xaa₄₄₇ is Arg

Xaa₄₅₃ is Asn
Xaa₄₅₉ is Met, and
Xaa₄₈₅ is Gly.

Claim 69. (currently amended) The isolated nucleic acid fragment of Claim 1 where

~~Xaa₁₀ is Phe or Leu~~
Xaa₁₆ is Leu
Xaa₂₃ is Thr
Xaa₂₅ is Lys
Xaa₃₉ is Lys
Xaa₄₈ is Leu
Xaa₆₀ is Leu
Xaa₇₃ is ~~Leu or His~~
Xaa₇₄ is ~~Ser or Tyr~~
Xaa₉₅ is ~~Ala or Thr~~
Xaa₉₆ is ~~Asn or His~~
Xaa₁₀₂ is ~~Asn or Ser~~
Xaa₁₁₀ is ~~Ile, Val, or Thr~~
Xaa₁₁₂ is ~~Arg or His~~
Xaa₁₁₇ is ~~Asn or Ser~~
Xaa₁₁₈ is ~~Ser or Leu~~
Xaa₁₂₁ is ~~Met or Arg~~
Xaa₁₂₂ is ~~Ala or Val~~
Xaa₁₂₄ is ~~Phe or Ile~~
Xaa₁₂₉ is ~~Lys or Arg~~
Xaa₁₄₇ is ~~Lys or Glu~~
Xaa₁₅₉ is ~~Leu or Phe~~
Xaa₁₆₂ is ~~Ala or Val~~
Xaa₁₆₆ is ~~Ser or Gly~~
Xaa₁₇₀ is ~~Gln or Arg~~
Xaa₁₇₅ is ~~Val or Leu~~
Xaa₁₈₃ is ~~Ala or Thr~~
Xaa₁₈₇ is ~~Thr or Ile~~
Xaa₁₉₁ is ~~Met or Val~~
Xaa₂₀₉ is ~~Phe or Tyr~~
Xaa₂₁₉ is ~~Arg or Trp~~
Xaa₂₂₃ is ~~Tyr or His~~
Xaa₂₅₃ is ~~Gly or Glu~~
Xaa₂₅₉ is ~~Lys or Glu~~

Xaa₂₆₃ is Val-~~or~~-Asp
Xaa₂₆₄ is Val, ~~Asp~~, ~~or~~ Ile
Xaa₂₆₈ is Ala-~~or~~-Val
Xaa₂₇₂ is Phe-~~or~~-Leu
Xaa₂₈₅ is Thr-~~or~~-Met
Xaa₂₉₂ is Glu-~~or~~-Asp
Xaa₂₉₃ is His
Xaa₂₉₄ is Thr, ~~or~~ Ile
Xaa₃₀₁ is Phe-~~or~~-Leu
Xaa₃₀₆ is Thr-~~or~~ Ile
Xaa₃₁₁ is Val-~~or~~-Glu
Xaa₃₁₂ is Val-~~or~~-Ala
Xaa₃₂₅ is Arg-~~or~~-Lys
Xaa₃₂₈ is Gln-~~or~~-Glu
Xaa₃₃₄ is Val-~~or~~-Ala
Xaa₃₄₂ is Arg-~~or~~ Ile
Xaa₃₇₇ is Thr-~~or~~ Ile
Xaa₃₈₁ is Glu-~~or~~-Gly
Xaa₃₈₅ is Tyr, His, ~~or~~ Cys
Xaa₃₈₇ is Ile-~~or~~-Thr
Xaa₃₉₃ is Val-~~or~~ Ile
Xaa₃₉₄ is Leu-~~or~~-Pro
Xaa₄₀₂ is Arg-~~or~~-Lys
Xaa₄₀₄ is Ser-~~or~~-Pro
Xaa₄₁₃ is Ser-~~or~~-Phe
Xaa₄₂₂ is Glu-~~or~~-Gly
Xaa₄₂₈ is Gly-~~or~~-Arg
Xaa₄₂₉ is Pro-~~or~~-Leu
Xaa₄₃₅ is Gln-~~or~~-Arg
Xaa₄₄₇ is Arg-~~or~~-Gly
Xaa₄₅₃ is Asn, Ser, ~~or~~ Ile
Xaa₄₅₉ is Met-~~or~~-Thr, and
Xaa₄₈₅ is Asp-~~or~~-Gly.

Claim 70. (new) The isolated nucleic acid fragment of Claim 4 wherein the polypeptide has the amino acid sequence as set forth in SEQ ID NO:66.

Claim 71. (new) An isolated nucleic acid encoding a polypeptide having isoflavone synthase activity wherein the polypeptide is 95% identical to SEQ ID NO:2, and

wherein the nucleic acid does not have the nucleic acid sequence as set forth in SEQ ID NO:9.

Claim 72. (new) The isolated nucleic acid of Claim 71 wherein the polypeptide has the amino acid sequence as set forth in SEQ ID NO:66

Amendments to the Sequence Listing

The attached Sequence Listing includes definitions for the <223> lines in all the unsure. The amino acid sequence in SEQ ID NO:66 was amended at position 294 where Ile was replaced by Xaa. This Sequence Listing replaces the Sequence Listing originally filed with the application.

Attachment: Replacement Sequence Listing